

Neutrophilic Dermatositis following COVID-19 Vaccination: A Case Report

Introduction:

- Here we present a case of neutrophilic dermatosis of the dorsal hands (NDH) following recent SARS-CoV-2 vaccination in a patient with history significant for chronic lymphocytic leukemia.
- NDH is a rare localized variant of Sweet Syndrome (SS) characterized by painful erythematous nodules, a dense neutrophilic infiltrate in the upper dermis generally without vasculitis, elevated neutrophil count, and pyrexia^{1,2}.

Case Description:

- An XX-year-old male with chronic lymphocytic leukemia (CLL) presented to the VA dermatology clinic with painful lesions on the dorsal hands bilaterally, of 4 days duration.
- Review of systems was significant for recent fever, loss of smell, and diarrhea.
- 4 days prior to the onset of his symptoms, he had received the first dose of an approved vaccine for SARS-CoV-2.
- No treatments had been tried prior to initial evaluation.
- Thorough laboratory evaluation was unrevealing and mid turbinate COVID-19 PCR testing returned negative twice. His symptoms continued to worsen despite the use of high-potency topical steroids.

Clinical Presentation:



Figure 1: Physical examination of the dorsal hands revealed several red to violaceous, juicy, tender papules, some with overlying bullae with an erythematous border. A punch biopsy was obtained showing only minimal inflammation and mild vasculopathy.

Clinical Presentation:



Figure 2: At 1-week follow-up, physical examination revealed erythematous juicy plaque with bullae over the right dorsal hand extending to the second finger.

Pathology:

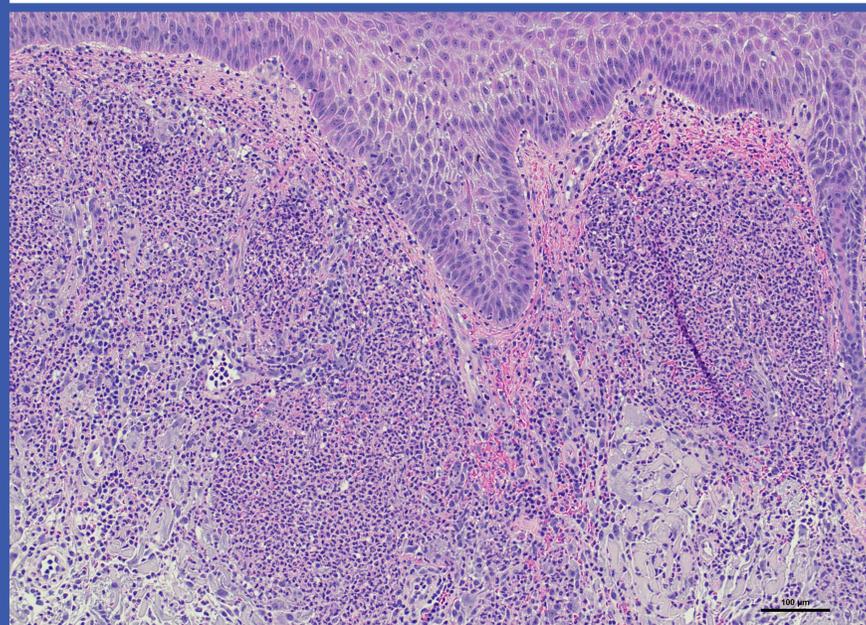


Figure 3: On repeat biopsy, histologic findings included a dense neutrophilic infiltrate and superficial dermal edema. Special stains for microorganisms were negative.

Diagnosis & Treatment:

- Based on clinical and histologic presentation, the patient was diagnosed with neutrophilic dermatosis of the dorsal hands, a rare, localized variant of Sweet Syndrome.
- The patient was started on systemic steroids, which led to rapid improvement. Condition resolved w/o recurrence.

Discussion:

- The patient has known CLL that was deemed stable.
- Hematologic malignancies are a known risk factor for neutrophilic dermatosis and the patient's recent vaccination may have been an acute trigger.
- Classical SS has known associations with underlying hematologic malignancy, inflammatory disease, pregnancy, preceding upper respiratory or gastrointestinal infection, and vaccination¹.
- While rare, within the last 50 years there have been a handful of reported cases of neutrophilic dermatosis following vaccination for Smallpox, TB, Pneumococcal, and Influenza³.
- Of note, this patient received the Shingles vaccine, Pneumovax, Prevnar13, TDAP, and the HPV vaccine in recent years with no reported adverse reaction.
- In the wake of the COVID-19 pandemic, recent publications have reported additional cases of Sweet Syndrome following SARS-CoV-2 vaccination⁴ and COVID-19 infection⁵.
- Nevertheless, further study is required to understand the pathophysiology of Sweet Syndrome and confirm a causal relationship between SARS-CoV-2 vaccination and the development of neutrophilic dermatosis of the dorsal hands.
- Finally, it is significant to recognize that NDH is commonly misdiagnosed and treated with antibiotics or surgery⁶. Therefore, increased awareness and understanding of NDH and its associations are vital for accurate diagnosis and rapid administration of highly effective steroid therapy.

References:

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4. Darrigade AS, et al., 2021: *Allergy*, doi: 10.1111/all.14981.
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